MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
Jennifer M. Granholm, Governor; Steven E. Chester, Director

REMEDIATION AND REDEVELOPMENT DIVISION

INFORMATION BULLETIN #1

PINE GROVE SUBDIVISION
FORMER PARSONS CORPORATION SITE
EAST BAY TOWNSHIP, GRAND TRAVERSE COUNTY
October 2005

Introduction

This Michigan Department of Environmental Quality (MDEQ) bulletin is designed to inform community residents of environmental conditions and actions taken at the former Parsons Corporation site, currently the Traverse Bay Area (TBA) Career Technical Center, 880 Parsons Road, Traverse City.

Environmental studies have documented groundwater contamination migrating from the site through the Pine Grove Subdivision and discharging into the East Arm of Grand Traverse Bay and Mitchell Creek.

The former Parsons Corporation manufactured helicopter blades at the site from the 1950s-1970s and typically used industrial solvents as a degreasing agent in its manufacturing process. The TBA Career Technical Center began operating at the site in 1976 using similar solvents in the TBA shops. Historical disposal practices of wastes containing degreasers ultimately led to soil and groundwater contamination at the property.

As a result, the TBA Intermediate School District (TBAISD) and AK Steel – the corporate entities assuming responsibility for the former Parsons Corporation facility – are obligated to cleanup or control the contamination in accordance with Michigan's environmental remediation law, Part 201, Environmental Remediation, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA).

Site History

The contamination was initially discovered in 1982 when 38 private water supply wells serving residents in the Pine Grove Subdivision area were found to be contaminated with hazardous substances. Tetrachloroethylene, a cancer causing agent, was found in drinking water wells at concentrations as high as 300 parts per billion (ppb), exceeding the present state drinking water standard of five (5) ppb.

State funds were utilized to extend the municipal drinking water supply to the affected and threatened residences. Additional state funds were used from 1985 to 1989 to investigate the nature and extent of the contamination and identify feasible cleanup options.

The state-funded investigation determined there were two distinct source areas contributing to groundwater and residential well contamination in the Pine Grove Subdivision (see Figure 1), specifically:

1. Former Parsons Corporation/TBAISD facility – the origin of the Balsam Street and Mitchell Street groundwater plumes. The plumes extend 2000 feet to East Grand Traverse Bay and to Mitchell Creek – a cold water trout stream which discharges into the Bay.

2. U.S. Coast Guard Station – the origin of the Avenue E groundwater plume, which extends 4000 feet to East Grand Traverse Bay (see section on Avenue E Groundwater Plume).

Seepage pits, floor drains, dry wells, helicopter test pads, and the storm drain system used by Parsons Corporation were identified as probable areas of industrial solvent releases. Similar solvents used in the TBA Career Technical Center shops were also determined a probable source of groundwater contamination.

The investigation further revealed that groundwater concentrations of tetrachloroethylene at Mitchell Creek were at concentrations five (5) times the 45 ppb cleanup criteria for groundwater venting to the surface waters. These criteria are protective for human health and aquatic organisms in the surface water.

A “facility” as defined by Part 201 of the NREPA, includes any area where a hazardous substance is above the generic residential cleanup criteria. The Former Parsons Corporation “facility” includes any area where tetrachoroethylene in the groundwater is above the drinking water criteria of five (5) ppb, as well as limited areas of soil contamination on the TBAISD property.

The extent of the “facility” where tetrachloroethylene contamination is above five (5) ppb has been determined by monitoring wells installed and monitored on a regular basis. Inferences about the location of the plume, and thus the extent of the "facility," are based upon numerous factors including: where concentrations of tetrachloroethylene either exceed or are less than the criteria; the space between wells measuring those concentrations; groundwater flow direction; and best professional judgment utilizing generally accepted hydrogeological principles. This data is reviewed by the MDEQ periodically to determine if the location of the “facility” has changed. The plume, as shown on the attached map, depicts the area that is currently known to be a “facility.” The extent of this area has not changed significantly with the most recent sampling.

Section 16(1) of Part 201 relates to property that is part of a “facility” and applies to the area where groundwater containing tetrachloroethylene above five (5) ppb has migrated, as well as to the TBAISD property. Section 16(1) requires anyone who is on notice or has information that their property is a “facility” to disclose the general nature and extent of the contamination to future owners or occupants of the property.

TBAISD and AK Steel are also required to notify all property owners where tetrachloroethylene in groundwater above five (5) ppb has migrated from the TBAISD property. TBAISD did such a notification in September 2003 when that requirement went into effect.

Consent Decree

On May 31, 1994, a legal agreement called a “Consent Decree” was entered between the MDEQ (formerly the Michigan Department of Natural Resources), Armco (A.K. Steel’s predecessor), and the TBAISD for the site. The Consent Decree required the TBAISD and Armco to undertake limited response actions including the installation of a soil vapor extraction system to treat the soil and, if certain criteria were not met by the extraction system, install an air sparge system to treat contaminated soil and groundwater. Armco and TBAISD, as part of the Consent Decree, also reimbursed the state for the past response activity costs incurred by the state associated with the former Parsons Corporation facility source area.

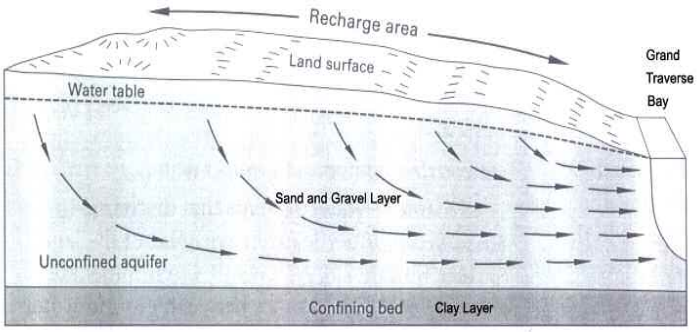
The soil vapor extraction system operated from May 1996 through December 2001. In 2000, a disagreement over the need for installation of the air sparge system occurred. In an effort to resolve the issue, the parties renegotiated the requirements of the Consent Decree. On April 24, 2001, a second Consent Decree superseded the original decree, requiring the parties to prepare a remedial action plan (RAP) in accordance with Part 201, Michigan’s environmental cleanup law.

Current Site Status

In March 2004, TBAISD and AK Steel provided the MDEQ with a proposed RAP. On September 15, 2004, the MDEQ issued a *Notice of Noncompliance with Consent Decree* to TBAISD and AK Steel advising their March 2004 RAP was insufficient to meet the requirements of Part 201 and that stipulated penalties were accruing and would be assessed.

The MDEQ, TBAISD, and AK Steel have agreed to enter an amendment to the April 2001 Consent Decree. The amendment will require an approvable RAP to be submitted by March 1, 2006, and payment of $60,000, along with performance of a Supplemental Environmental Project valued at $40,000, as penalties to resolve the violations.

Site Geology



The site geology is generally comprised of sand and gravel to a depth of over 100 feet below grade. A clay layer over 100 feet thick exists beneath the sand and gravel layer. Groundwater occurs 7 to 24 feet below grade at the site. The aquifer thickness ranges from 65 to approximately 120 feet and extends to the top of the clay layer. The groundwater flows through the sand and gravel layer into Mitchell Creek and Grand Traverse Bay.

Balsam Street and Mitchell Street Plumes
Groundwater Impacts on Drinking Water

Background: The hazardous substances contaminating the groundwater in the eastern portion of the Pine Grove Subdivision originated as liquid wastes disposed from the Parsons Corporation facility. These wastes infiltrated the ground, migrated vertically into the groundwater, then laterally to Mitchell Creek and Grand Traverse Bay.

Contaminants identified in the groundwater at the site exceed the Part 201 generic residential drinking water criteria. The areas affected are primarily the northern half of the TBAISD property, and the area between Balsam and Mitchell Streets extending to Grand Traverse Bay (Figure 1). Contaminant concentrations, while decreasing, still exceed drinking water criteria.

Public Safety: The municipal water supply system servicing East Bay Township residences and businesses meets federal and state drinking water standards for tetrachloroethylene and is safe for human consumption. The source of the Township's municipal water system is groundwater wells located in East Bay Township. Grand Traverse County tests the system for volatile contaminants, including tetrachloroethylene, every three years.

Some private water wells, however, remain in the area. The risks from use of the remaining private water wells have been evaluated as follows:

- Drinking: Assuming the groundwater concentrations continue to exceed drinking water criteria, the private wells must not be used as a primary source of drinking water. Based upon current information, there are no residences identified that use the private wells for drinking water. Occasional ingestion of water from the remaining wells would pose considerably less risk than if the wells were used full-time for drinking (e.g., drinking two liters a day for thirty years from that well).
- Other uses: The preliminary indication is that the current contaminant concentrations do not pose an unacceptable risk for direct contact with the contaminated groundwater. The MDEQ has developed a screening level for tetrachloroethylene to assess risks for general household uses from bathing, showering, clothes and dishwashing with contaminated groundwater for up to three years (the average time necessary for a permanent water supply replacement). A site specific criterion to further address potential risks from direct contact with the contaminated groundwater (e.g., using groundwater to fill a swimming pool) is being developed for MDEQ review.
- Gardening: Vegetables or fruits irrigated with groundwater contaminated at current concentrations would not be expected to contain unacceptable levels of tetra-chloroethylene. Data is not available to assess the potential for tetrachloroethylene to concentrate in plants. However, much of the tetrachloroethylene in the groundwater is expected to volatilize during irrigation. Nonetheless, it would be prudent for such fruits and vegetables to be washed with uncontaminated water before consumption.

Future Actions: TBAISD and AK Steel have identified 23 private water wells within the eastern portion of the Pine Grove Subdivision. Efforts continue to identify and plug any remaining wells. Many of the private wells have already been abandoned. These actions are being taken to prevent human exposure to potentially unacceptable levels of contamination from the remaining wells.

Balsam Street and Mitchell Street Plumes
Groundwater Impacts on Surface Water

Mitchell Creek flows into East Grand Traverse Bay

Background: As indicated before, monitoring wells demonstrate that groundwater contamination migrates from the site and discharges into Grand Traverse Bay and Mitchell Creek. The concentration of tetrachloroethylene found in monitoring wells on the TBAISD property, and in the downgradient plume at locations that represent the groundwater venting to Grand Traverse Bay and Mitchell Creek, exceed the Part 201 generic groundwater surface water interface (GSI) criteria. The generic criterion is based upon protecting human exposure

(recreational uses such as swimming or wading, and fish consumption) and aquatic life.

In accordance with applicable Part 201 provisions, under appropriate conditions, some allowance can be provided for dilution that occurs when groundwater discharges into surface waters. In those cases where dilution is appropriate, alternative criteria (known as mixing zone based GSI criteria) are developed. Current monitoring results of the discharges indicate neither plume exceeds the mixing zone based GSI criteria that are protective of human health and aquatic life exposure at Mitchell Creek and along East Grand Traverse Bay.

Future Actions: The monitoring well locations existing prior to 2005 did not provide a full characterization of the groundwater concentrations discharging to Grand Traverse Bay. Additional monitoring wells have recently been installed and will be sampled several times. This will assure an effective and reliable monitoring system.

Public Safety: There are currently no public safety issues caused by the groundwater entering the surface water. Monitoring of the public water supply that uses Grand Traverse Bay as a source includes monitoring for tetrachloroethylene. The water supply meets federal and state drinking water standards. Monitoring of the groundwater prior to it entering the surface waters will continue to assure that concentrations remain below criteria protective of human health and aquatic life exposures.

Soil

Background: Results from soil samples at the TBAISD property document soil contamination from historical waste disposal activities.

Future Actions: The historical data was not sufficient and the MDEQ requested additional data be collected under current protocols from the TBAISD property to assure there are no unacceptable risks to human contact with soil. The MDEQ has also requested additional review of the actions taken to close the former lagoons, floor drains, storm sewers, and trenches to assure no unacceptable risks remain. Additional samples and information has been gathered, and will be evaluated with the RAP preparation.

Public Safety: There are currently no known public safety issues from soil contamination on the TBAISD property or off-property.

Sediments

Background: A storm drain transports storm water runoff from the property to Mitchell Creek. Historically, solvents were transported to Mitchell Creek through the storm sewer. Response actions were taken to remove connections that had allowed solvents into the storm drain.

Future Actions: The MDEQ has requested information regarding Mitchell Creek sediments in the area the storm drain discharges to assure there is no impact from the transport of solvents through the storm drain. Samples have been collected and will be evaluated with the RAP preparation.

Public Safety: There are currently no known public safety issues caused by the sediments in Mitchell Creek.

Ave E Groundwater Plume

During the 1980's investigation conducted in the Pine Grove Subdivision, the groundwater contamination in the vicinity of Avenue E was also investigated. The U.S. Coast Guard was identified as the probable source of this contamination and has implemented several cleanup technologies as required by a 1987 settlement agreement. Currently, there are no groundwater contaminants migrating off of the U.S. Coast Guard's property above any Part 201 generic criteria. Levels of contaminants slightly above drinking water criteria still linger in the groundwater along Avenue E. Consequently, residents should continue to use the public water supply for domestic consumption.

Remedy Selection

Part 201 and the Part 201 Administrative Rules identify criteria the MDEQ must use in selecting approvable remedial actions. At a minimum, remedial actions must: 1) assure the protection of the public health, safety, welfare, and the environment, and except as otherwise provided, must 2) attain a degree of cleanup and control of hazardous substances that complies with all relevant and appropriate requirements, rules, criteria, limitations, and standards of state and federal environmental law.

Remedial actions must not allow contaminated groundwater plumes to expand once a remedial action is initiated. Additionally, actions must provide for removal of hazardous substances from contaminated groundwater through active remediation or as a result of naturally occurring biological or chemical processes, unless certain

conditions are met that allow the MDEQ to make a finding that the remedial action is protective of the public health, safety, welfare, and the environment.

Part 201 provisions allow remedial actions to control exposure pathways by restricting land or resource use. For example, groundwater often may not be required to be cleaned up to the drinking water criteria, provided drinking water exposures are controlled by the provision of an alternate drinking water source, and restrictions are put in place on groundwater use to assure unacceptable exposures do not occur.

Part 201 provisions also allow for remedial actions to provide for the reduction of hazardous substance concentrations through a naturally occurring process known as monitored natural attenuation, as long as human exposures and other environmental exposures are addressed.

The RAP must provide an explanation of any land use or resource use restrictions to be implemented and how the restrictions will be effective in preventing or controlling unacceptable exposures. If the RAP relies upon the use of monitored natural attenuation, it must provide information that demonstrates the cleanup criteria will be achieved in a reasonable period of time, and there will be no adverse impact on the environment while the attenuation occurs.

Future Public Input

An approvable RAP must be submitted by March 1, 2006. Upon receipt, the MDEQ will schedule a public meeting for comments on the proposed actions.

Commonly Asked Question

Question: What if I live two blocks from an identified groundwater problem, should I have my water tested?

Answer: If you are certain that your drinking water comes from a private well, and you live close to either site, you should contact the MDEQ project manager for further information.

For More Information

For more comprehensive information on the site and activities, please contact the MDEQ project manager:

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Figure 1
Traverse Bay Area Career Technical Center/A.K. Steel and U.S. Coast Guard Groundwater Contaminant Plumes

Department of Environmental Quality

Remediation and Redevelopment Division